Addendum to ESAH Version 3 – Connection Guideline

Addendum 3.2.1

3.2.1 Substation Categories

d. Distribution Substation (Pencawang Elektrik – PE)

Distribution substations are capacity injection points from 11kV, 22kV and sometimes 33kV system to the low voltage network (400V, 230V). Typical capacity ratings are 1000kVA, 750kVA, 500kVA and 300kVA.

Note: Service cable from TNB 33kV and 11kV substation (whereby the metering room is within TNB’s control area) to the consumer substation shall be laid and maintain by TNB if the service is within 30 meters. For service cable above 30 meters shall be laid and maintain by the consumer.

Conventional Substation

Conventional substation designs are of indoor type (equipment housed in a permanent building) and out-door type (ground-mounted or pole-mounted). Standardized M & E design of SSU 11kV and 11/.4kV substation is available at TNB offices.

Compact Substation

Compact substation 11/.4kV is encouraged to be installed for new housing and commercial development, with following guidelines:

- Maximum size of compact substation 11/.4kV for new housing development (domestic consumers) is 500kVA.

- Maximum size of compact substation 11/.4kV for new commercial development (commercial consumers) is 1000kVA.

- Compact substation to be placed close to the load center.

- Compact substation not to be placed at the corners of one development.

- Compact substation cannot be placed close to each other to ensure efficient load distribution to the consumers.

- Compact substation is considered as ‘special feature design schemes’ in which special features cost is charged to the consumer as per Clause 8.0 of Statement of Connection Charges 1994/1995.
Compact substation of bigger capacities has limited application and is to be strictly applied in selective situations under the following circumstances:

- System reinforcement projects for highly built-up areas where substation land is difficult to acquire.
- Any request to use compact substation for dedicated supply to a single or limited group of low voltage consumers is subject to TNB approval in accordance to site constraints situation, and to be considered as ‘special feature design schemes’.

Appropriate distribution network design to ensure security of supply & restoration time to consumers:

- If the development is more than 5MVA, Main Distribution Sub-Station (PPU) and / or Main Switching Station (SSU) shall be provided by the developer within the housing development to support 11kV network connection to respective distribution substation.

- For development that is less than 5MVA, requirement of Main Distribution Sub-Station (PPU) and / or Main Switching Station (SSU) depends on the existing network configuration & constraints.